

What is claimed is:

SUPA 1. A method for eliminating or minimizing the transition that occurs when real background noise is replaced by comfort noise in an IP telephone, said IP telephone having a TX unit, said method comprising:

5 determining, by said TX unit of said IP telephone, whether silence exists;
if silence is detected, then sending, by said TX unit, a first silence indication packet while said TX unit continues to send voice packets;
waiting, by said TX unit, for a predetermined amount of time to pass;
10 sending, by said TX unit, a second silence indication packet after said predetermined amount of time passes;
waiting, by said TX unit, for voice activity to be detected; and
starting, by said TX unit, normal packet activity after said voice activity is detected.

2. The method of claim 1, wherein said first silence indication has an indication
15 therein which contains the background noise level sensed by the TX unit.

3. The method of claim 1, wherein said first silence indication contains an indication therein which indicates the rate at which the real background noise should be attenuated.

4. The method of claim 3, wherein said rate is determined according to the formula
 5 Rate = Background Noise (dB) / Time (sec.).

5. The method of claim 1, wherein, said predetermined amount of time comprises an amount of time sufficient for the RX unit to attenuate the real background noise.

6. The method of claim 5, wherein said predetermined amount of time comprises approximately two seconds.

7. A method for eliminating or minimizing the transition that occurs when real background noise is replaced by comfort noise in an IP telephone, said IP telephone having a RX unit, said method comprising:

waiting, by said RX unit, for a first silence indication packet to be received while said RX unit is receiving incoming packets;

15 attenuating, by said RX unit, said incoming packets when said first attenuation packet is received from a TX unit, said attenuation occurring at a rate responsive to an indication provided by said TX unit;

mixing, by said RX unit, comfort noise with said attenuated incoming packets;

waiting, by said RX unit, for a second silence indication packet to be received;

generating, by said RX unit, comfort noise at a level responsive to an indication provided by said TX unit when said second silence indication is received;

waiting, by said RX unit, for voice packets to be received from said TX unit; and

stopping, by said RX unit, the generation of comfort noise and playing voice packets when voice packets are received by said RX unit.

8. The method of claim 7, wherein said act of attenuation is performed at a rate specified in the first silence indication packet.

9. The method of claim 7, wherein said act of generating comfort noise is performed at a level contained in a silence indication packet sent by the TX unit.

10. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for eliminating or minimizing the transition that occurs when real background noise is replaced by comfort noise in an IP telephone, said method comprising:

determining, by said TX unit of said IP telephone, whether silence exists;

if silence is detected, then sending, by said TX unit, a first silence indication packet while said TX unit continues to send voice packets;

waiting, by said TX unit, for a predetermined amount of time to pass;

sending, by said TX unit, a second silence indication packet after said
 5 predetermined amount of time passes;

waiting, by said TX unit, for voice activity to be detected; and

starting, by said TX unit, normal packet activity after said voice activity is
 detected.

11. The program storage device of claim 10, wherein said first silence indication has
 10 an indication therein which contains the background noise level sensed by the TX unit.

12. The program storage device of claim 10, wherein said first silence indication
 contains an indication therein which indicates the rate at which the real
 background noise should be attenuated.

13. The program storage device of claim 12, wherein said rate is determined according
 15 to the formula $\text{Rate} = \text{Background Noise (dB)} / \text{Time (sec.)}$.

14. The program storage device of claim 10, wherein, said predetermined amount of time comprises an amount of time sufficient for the RX unit to attenuate the real background noise.

15. The program storage device of claim 14, wherein said predetermined amount of time comprises approximately two seconds.

16. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for eliminating or minimizing the transition that occurs when real background noise is replaced by comfort noise in an IP telephone having a RX unit, said method comprising:

waiting, by said RX unit, for a first silence indication packet to be received while said RX unit is receiving incoming packets;

attenuating, by said RX unit, said incoming packets when said first attenuation packet is received from a TX unit, said attenuation occurring at a rate responsive to an indication provided by said TX unit;

mixing, by said RX unit, comfort noise with said attenuated incoming packets;

waiting, by said RX unit, for a second silence indication packet to be received;

generating, by said RX unit, comfort noise at a level responsive to an indication provided by said TX unit when said second silence indication is received;

waiting, by said RX unit, for voice packets to be received from said TX unit;

and

stopping, by said RX unit, the generation of comfort noise and playing voice packets when voice packets are received by said RX unit.

17. The program storage device of claim 16, wherein said act of attenuation is performed at a rate specified in the first silence indication packet.

18. The program storage device of claim 16, wherein said act of generating comfort noise is performed at a level contained in a silence indication packet sent by the TX unit.

19. An IP telephony apparatus configured for eliminating or minimizing the transition that occurs when real background noise is replaced by comfort noise in an IP telephone, said IP telephony apparatus having a TX unit, said apparatus comprising:

means for determining whether silence exists;

means for sending a first silence indication packet while said TX unit continues to send voice packets if silence is detected;

means for waiting a predetermined amount of time to pass;

means for sending a second silence indication packet after said predetermined amount of time passes;

means for waiting for voice activity to be detected; and

means for starting normal packet activity after said voice activity is detected.

20. The apparatus of claim 19, wherein said first silence indication has an indication therein which contains the background noise level sensed by the TX unit.

21. The apparatus of claim 19, wherein said first silence indication contains an indication therein which indicates the rate at which the real background noise should be attenuated.

22. The apparatus of claim 21, wherein said rate is determined according to the formula $\text{Rate} = \text{Background Noise (dB)} / \text{Time (sec.)}$.

23. The apparatus of claim 19, wherein, said predetermined amount of time comprises an amount of time sufficient for the RX unit to attenuate the real background noise.

24. The apparatus of claim 23, wherein said predetermined amount of time comprises approximately two seconds.

25. An IP telephony apparatus for eliminating or minimizing the transition that occurs when real background noise is replaced by comfort noise in an IP telephone, said IP telephone having a RX unit, said method comprising:

means for waiting for a first silence indication packet to be received while said RX unit is receiving incoming packets;

means for attenuating said incoming packets when said first attenuation packet is received from a TX unit, said attenuation occurring at a rate responsive to an indication provided by said TX unit;

means for mixing comfort noise with said attenuated incoming packets;

means for waiting for a second silence indication packet to be received;

means for generating comfort noise at a level responsive to an indication provided by said TX unit when said second silence indication is received;

means for waiting for voice packets to be received from said TX unit; and

means for stopping the generation of comfort noise and playing voice packets when voice packets are received by said RX unit.

26. The apparatus of claim 25, wherein said attenuation is performed at a rate specified in the first silence indication packet.
27. The apparatus of claim 25, wherein said generating comfort noise is performed at a level contained in a silence indication packet sent by the TX unit.